

# Including the More-Than-Human World in Responsible Research and Innovation (RRI): Developing a Conceptual Framework



## Summary document

By Catherine Price, Tom Bott, Vicky Bowskill, Min Burdett, Amy Gibbons, Heather Gilbert, Lottie Hawkins, Pru Hobson-West, Jessica Holmes, Tim Hounsome, Billie Ireland, Will Meredith, Chrysanthi Michelaki, Kate Millar, Carol Morris, Perry Walker, Laurie Waller, Miranda Whall



## Project aim

The aim of the project was to design, co-produce and provide a conceptual framework for including the more-than-human world (animals, plants, soil, water, land etc.) within responsible research and innovation (RRI). RRI is a process of research and development that considers science and technological developments within a wider context. In 2013, Stilgoe et al. (2013)<sup>1</sup> developed an RRI framework which was adopted in the UK by UK Research and Innovation (UKRI), and in particular, the Engineering and Physical Sciences Research Council (EPSRC). The AREA framework that the EPSRC advocates consists of four dimensions and these are:

- **Anticipate** – describing and analysing the impacts, intended or otherwise.
- **Reflect** – reflecting on the purposes of, motivations for and potential implications of the research.
- **Engage** – opening up such visions, impacts and questioning to broader deliberation, dialogue, engagement and debate in an inclusive way.
- **Act** – using these processes to influence the direction and trajectory of the research and innovation process itself. (Adapted from EPSRC, 2024)<sup>2</sup>.

The aim of RRI is to engage a broad range of stakeholders to discuss how science and technology can best contribute to solving current problems whilst ensuring a desirable future for forthcoming generations. RRI acknowledges that innovation can be unpredictable as well as beneficial and can raise questions or concerns. The implementation of RRI by researchers ensures that research and its impacts are opened up to broader deliberation, engagement and debate in an inclusive manner, and enables the complexities and uncertainties of research to be revealed through

---

<sup>1</sup> Stilgoe, J., Owen, R. and Macnaghten, P., 2013. Developing a framework for responsible innovation. *Research Policy*, 42, pp. 1568–1580.

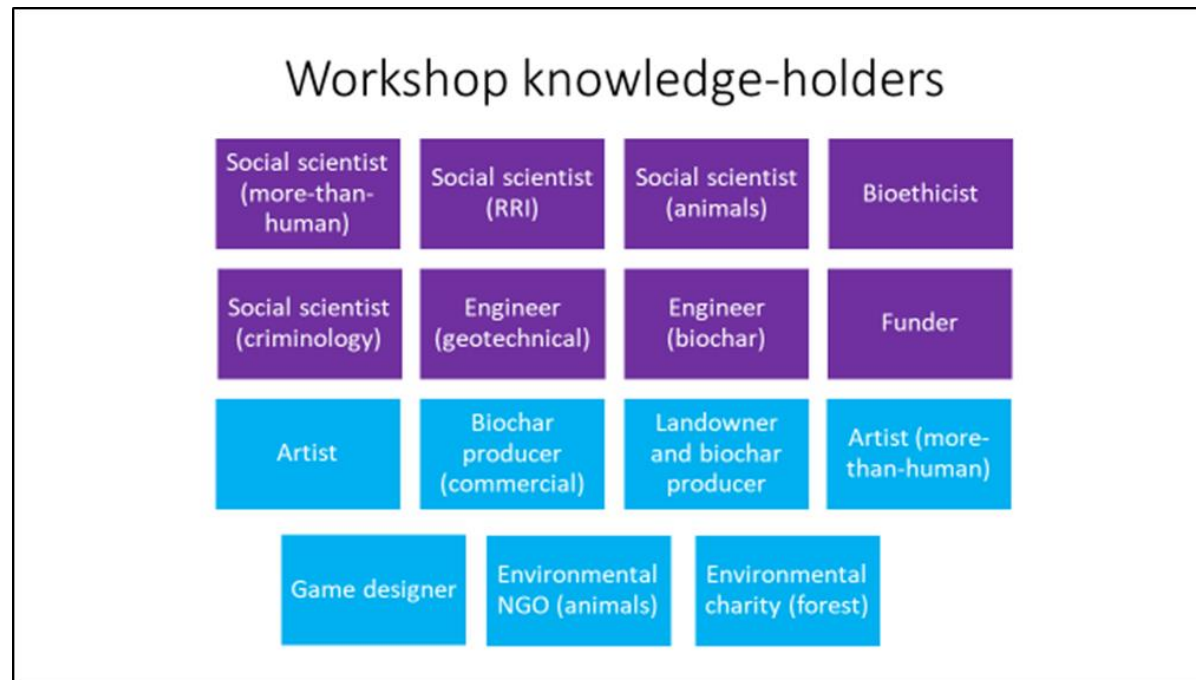
<sup>2</sup> EPSRC, 2024. Framework for responsible research and innovation. Available at <https://www.ukri.org/who-we-are/epsrc/our-policies-and-standards/framework-for-responsible-innovation/> [Accessed 28 October 2024].

involvement with those impacted by the research. Whilst there has been a call to include multispecies studies scholarship within RRI frameworks, no frameworks have yet been designed. This project also considered how the non-living, bodies such as soil and water, could be incorporated into such a framework.

To test the suitability of including the more-than-human world within an RRI framework, a case study of biochar was used. Biochar is a carbon-rich material produced when biomass undergoes a thermochemical process called pyrolysis. Biochar is an ideal case study as it is a ‘new technology’ that is currently being investigated for its greenhouse gas removal potential at scale and which has a direct impact on the more-than-human world throughout its lifecycle. The carbon trapped in biochar is incredibly stable, but long-term biochar storage is still being explored, with one option being its addition to soils.

This summary document provides an overview of the activities carried out at an in-person workshop held at the University of Nottingham, and a visual summary of the findings. Details are also provided about what participants learnt and gained from the workshop.

## In-person workshop at the University of Nottingham



**Figure 1** Knowledge-holders who attended the workshop. Knowledge-holders in purple are academics and knowledge-holders in blue are non-academics.

The project included a one-day, in-person workshop at the University of Nottingham, with diverse knowledge-holders to ensure different knowledges and perspectives were feeding into the project. 15 knowledge-holders participated in the workshop (Figure 1), and all knowledge-holders acted as co-producers of knowledge. Three activities were conducted during the workshop and knowledge-holders were asked to consider: 1) The more-than-human – is there a better term?; 2) Does the existing AREA framework work for the more-than-human?; and 3) What needs to be included in a revised RRI framework, and who are knowledge-holders? Figure 2 provides a visual summary of the findings for these three questions.

Visual Summary

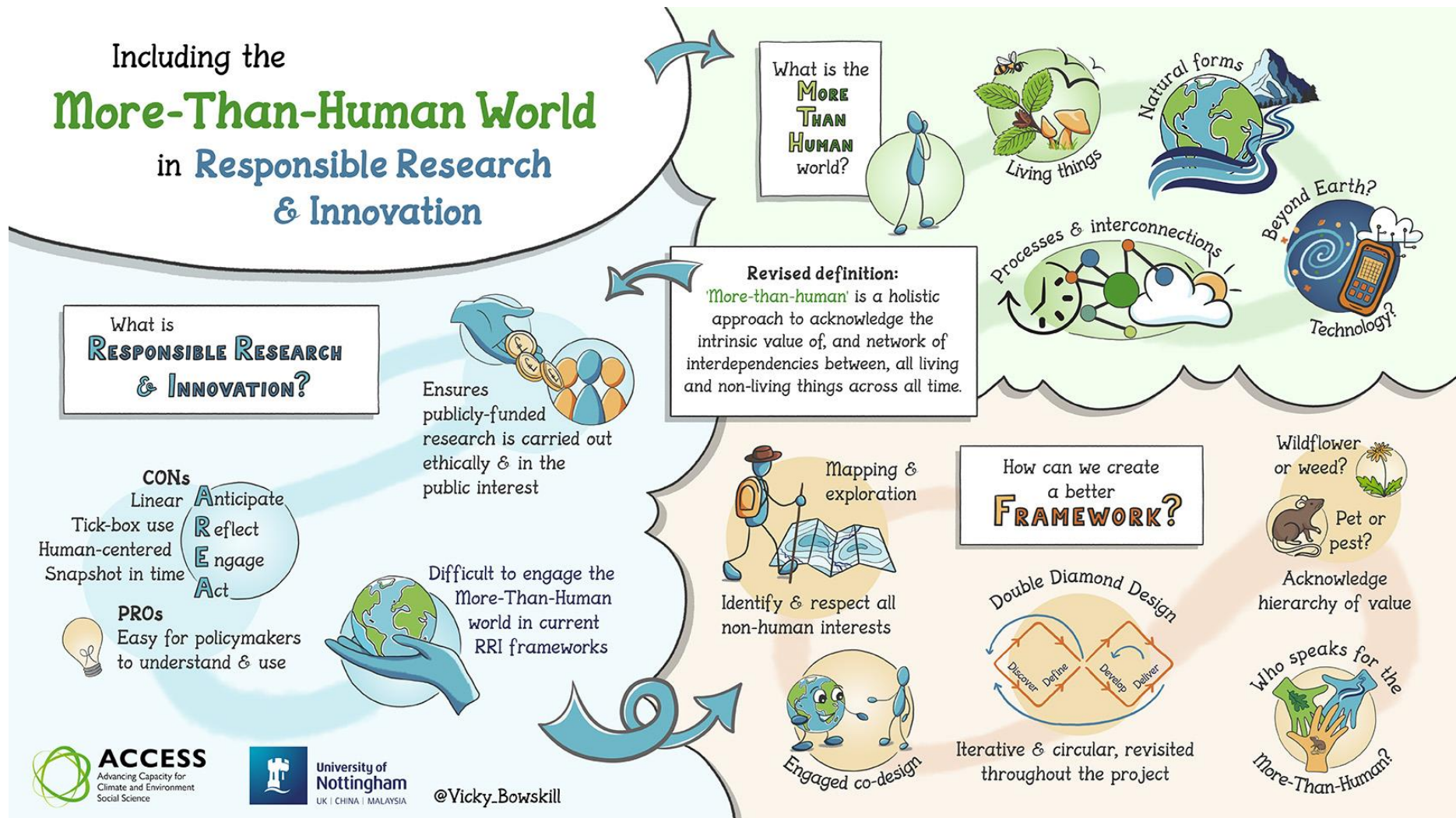


Figure 2 A visual summary of the findings from the 'Including the More-Than-Human World in Responsible Research and Innovation' workshop.



## **What was learnt from the workshop?**

- Academic knowledge-holders acknowledged that the diversity in the room did not normally occur in workshops. This diversity is important for conversations.
- Attempting to include the more-than-human world in RRI frameworks is novel and is a very different way of thinking.
- There is an appetite for conversations around the more-than-human world.
- The workshop was considered to be the start of attempting to include the more-than-human world in RRI frameworks. More work is required, but the foundations have been laid for a revised RRI framework which includes the more-than-human world.

## **How to cite this resource**

When referring to this resource it should be cited as follows: Price, C., Bott, T., Bowskill, V., Burdett, M., Gibbons, A., Gilbert, H., Hawkins, L., Hobson-West, P., Holmes, J., Hounsome, T., Ireland, B., Meredith, W., Michelaki, C., Millar, K., Morris, C., Walker, P., Waller, L. and Whall, M. (2024) Including the More-Than-Human World in Responsible Research and Innovation (RRI): Developing a Conceptual Framework Summary Document. School of Geography, University of Nottingham.

## **Contact details**

If you have any questions about this resource or the project, please contact Catherine Price via email at [catherine.price@nottingham.ac.uk](mailto:catherine.price@nottingham.ac.uk)

## **Acknowledgements**

This work was supported by [Advancing Capacity for Climate and Environment Social Science \(ACCESS\)](#) Flex Fund under Grant 119281R.